

5 What is claimed is:

1. A diagnostic instrument for analyzing liquid samples, comprising;

a sample carousel including at least one sample tube, the sample tube
capable of storing liquid sample to be analyzed;

10 a diagnostic carousel including at least one diagnostic vessel capable of
storing liquid sample to be analyzed, the diagnostic carousel being offset from the
sample carousel and lying in a different plane from the sample carousel, the diagnostic
vessel including a transfer mechanism for transferring sample from the sample tube
directly to the pipette; and

15 structure for bringing the diagnostic vessel into contact with the sample tube,
upon contact the transfer mechanism of the pipette being activated for transferring
sample from the sample tube to the diagnostic vessel.

2. The diagnostic instrument as set forth in Claim 1, wherein the diagnostic
vessel defines a pipette.

20 3. The diagnostic instrument as set forth in Claim 1, wherein the diagnostic
carousel lies in a plane that is elevated above the sample carousel plane.

4. The diagnostic instrument as set forth in Claim 3, wherein the structure for
bringing the pipette into contact with the sample tube includes an elevator structure
having an arm capable of connecting with the pipette and lowering the pipette into the
sample tube.

25 5. The diagnostic instrument as set forth in Claim 4, wherein the elevator
structure comprises a rotary elevator.

5 6. The diagnostic instrument as set forth in Claim 1, wherein sample
carousel has a capacity of between 30 and 120 sample tubes.

7. The diagnostic instrument as set forth in Claim 6, wherein there are a
plurality of sample tubes and a matching number of pipettes.

10 8. The diagnostic instrument as set forth in Claim 7, wherein each of the
sample tubes and pipettes have unique identifying indicia such that there is a matching
pipette for every sample tube and the diagnostic instrument includes means for reading
the unique identifying indicia and matching and aligning the appropriate sample tube
and pipette together.

15 9. The diagnostic instrument as set forth in Claim 1, wherein the sample tube
has an open proximal end and the proximal end includes a sample cup for storing the
sample.

20 10. An instrument for analyzing liquid samples, comprising;
a sample carousel including structure for storing a plurality of sample tubes,
the sample tubes capable of containing the liquid sample to be tested;
a diagnostic carousel including structure for storing a plurality of pipettes, the
diagnostic carousel being offset from the sample carousel, each of the pipettes
including a transfer mechanism for transferring the sample from the sample tube
directly to the pipette; and

25 structure for bringing the pipette into contact with the sample tube, upon
contact the transfer mechanism of the pipette being activated for transferring sample
from the sample tube to the pipette.

5 11. The instrument as set forth in Claim 10, wherein the diagnostic carousel
lies in a plane that is elevated above the sample carousel plane.

10 12. The instrument as set forth in Claim 11, wherein the structure for bringing
the pipette into contact with the sample tube includes an elevator structure having an
arm capable of connecting with the pipette and lowering the pipette into the sample
tube.

13. The instrument as set forth in Claim 10, wherein each of the carousels is
rotatable.

14. The instrument as set forth in Claim 10, wherein each of the carousels is
independently rotatable.

15 15. A instrument having overlapping carousel instrument, comprising:
a rotatable first carousel having structure suitable for holding at least one
sample, the sample being contained in a holder defining a sample tube, the sample
tube being removably held by the first carousel, the first carousel being in a first plane;
a rotatable second carousel, the second carousel being independently
20 rotatable from the first carousel, the second carousel overlapping the first carousel, the
second carousel including removable structure for holding at least a portion of the
sample, the holding structure defining a pipette, the second carousel being in a second
plane, different from the first plane, the first and second carousels overlapping and
having zone of intersection; and

5 a transfer mechanism for transferring at least a portion of the sample from
the sample tube directly to the pipette at the zone of intersection, defining a transfer
zone,

 whereby, sample is capable of being transferred from the first carousel to
the second carousel for diagnosis.

10 16. The instrument as set forth in Claim 15, wherein the sample tube and the
pipette each have identifying indicia and wherein each of the carousel includes a
reading structure for reading the indicia and wherein each carousel includes a
mechanism for rotating it through the zone of intersection such that the sample tube
and the pipette having matching indicia are aligned for transferring at least a portion of
15 the sample from the sample tube to the pipette for diagnosis.

 17. The instrument as set forth in Claim 16, wherein the reading structure for
each of the carousels comprises a bar code reader.

 18. The instrument as set forth in Claim 15, wherein the transfer mechanism
comprises the pipette having an aspiration structure and being brought together with
20 the sample tube to aspirate the sample from the sample tube to the pipette.

 19. A method of testing a sample in a diagnostic instrument including
overlapping carousels, the steps comprising:

 inserting a sample contained in a sample tube into a first carousel, the
sample tube having readable identifying indicia, the first carousel being rotatable and
25 lying in a first plane;

5 rotating an overlapping second carousel including a pipette having
readable identifying indicia for sample collection, the second carousel lying in a second
plane, different from the first plane, such that the sample tube having matching
identifying indicia with the pipette are aligned;

10 urging the pipette and sample tube together, the pipette including
aspiration structure;

aspirating sample from the sample tube to the pipette; and

20. The method of testing a sample in a diagnostic instrument as set forth in
Claim 19 wherein, the steps further include:

15 after aspirating sample from the sample tube, raising the pipette and rotating it to
a first station to begin the diagnostic process.

21. The method of testing a sample in a diagnostic instrument as set forth in
Claim 19 wherein, the steps further include:

the pipette having an outer surface and the outer surface has a plurality windows
and each of the windows represents a different testing criteria and wherein the
20 diagnostic procedure includes multiple simultaneous analysis and diagnosis of the
sample.